

PARKINSON CAFE

TRANSEURO



On November 27th the elevators in BMC's farthest wing were working overtime trying to keep up with a steady stream of people. Parkinson Café visitors were anxious to get out of the early winter cold and on to the top floor. The TRANSEURO-themed café had been fully booked weeks in advance and the room was filled with a collective anticipation. Seasoned café participants came prepared for the concluding Q&A. With notebooks readily placed in laps and scribbled pieces of paper sticking out of back pockets visitors turned their attention to moderator Göran Hermerén as he took the stage.

Upon a brief introduction of the TRANSEURO basics the floor was given to neurologist Håkan Widner, an experienced clinician who has the senior responsibility for TRANSEURO in Lund. Håkan explained that the main goal of TRANSEURO is to take a critical approach to the viability of cell therapy as a future treatment for Parkinson's disease. He posed some thought-pro-

voicing questions at the onset. Can we replace cells that die as a result of our most common neurological diseases? What are the therapies of the future for neurodegenerative diseases like Parkinson's and Alzheimer's?

Participants learned that as part of the European study TRANSEURO, five patients with Parkinson's disease will undergo brain cell transplants at

Skåne University Hospital in Lund, in early 2013. These are the first operations of their kind in Europe for over 10 years.

Giving a historic background to cell transplants for PD, a technique first developed in Lund, Håkan continued to tell a fascinating tale of continuous scientific breakthroughs. Under the leadership of Professor of Neurology



Crunch Time. After a couple of years of preparation it is time for brain cell transplants with the instrument developed by Stig Rehncrona and Janos Legradi.

Olle Lindvall, brain researchers in Lund had already developed the method of transplanting nerve cells in the early 1980s. In 1987, brain surgeon Stig Rehncrona operated on the very first patient. The study was significant in history marking the first repair of the human nervous system. The news was cabled out to all the world's media and the Swedish researchers soon graced the front page of the New York Times.

- **Since the advances** made in the 1980s and 1990s, the research field has encountered many obstacles. In the early 2000s, two American studies produced negative results, which meant that cell transplants for Parkinson's disease came to a dead end, said Håkan Widner, explaining the broken promises of a therapy that gave many patients so much hope 25 years ago.

- **The results of TRANSEURO** will play an important role in the immediate future of cell therapy as a viable treatment. We have scrutinized the failed American studies in an attempt to optimize the technique, improve patient selection and conduct more personalized follow-up. We are hopeful that the results will be different this time, concluded Professor Widner.

Veteran neurosurgeon Stig Rehncrona then entered the stage. The audience now got a quick lesson in the development of brain surgery for PD over the years. From lesions, via DBS to the regenerative approaches put to use within the TRANSEURO program. The structure being used for precise delivery in the upcoming operations is a stereotactic frame once developed in Lund and later refined by Stig himself.

- **A somewhat sloppy** nurse once dropped the stereotactic frame that

we were going to use for an impending operation. Since the patient was already in place I had no use but to take the original frame from the monter in the hospital museum. Sometimes you have to think on your feet. And sure enough, we sterilized the frame and the operation went without any complications, said Stig Rehncrona, the anecdote bringing down the biggest laughter of the evening.

Dr. Rehncrona has been responsible for all 20 transplants performed in Lund since 1987. In total he has made almost 300 insertions of brain cell tissue to target areas in patient brains. Together with Hjalmar Bjartmarz he will be overseeing the upcoming transplantations where they will use an insertion instrument developed by Stig himself together with Janos Legradi.

The final talk was given by experimental scientist Malin Parmar who is at the forefront of developing future alternatives to using fetal brain cells in transplantations. The fetal cells come with major logistical problems and also an ethical debate, perhaps more heated outside Sweden's borders. One of the earliest alternatives considered has been the use of embryonic stem cells. However, Malin explained, these cells have, in some cases, shown to continue dividing uncontrollably in the host brain, eventually causing tumours.

- **One way to bypass** this problem is to use a technique that we have developed in my lab where we turn the patients own skin cells directly into nerve cells. The technique, that we originally stumbled upon, is an unexpectedly simple one. It involves activating three genes in the skin cells, genes that are already known to be

active in the formation of brain cells at the fetal stage, Malin explained.

Unlike other reprogramming methods, where skin cells are turned into pluripotent stem cells, known as IPS cells, direct reprogramming means that the skin cells do not pass through the stem cell stage when they are converted into nerve cells. Skipping the stem cell stage may help to finally eliminate the risk of tumors forming after the cells are transplanted. Using the patients own skin cells as a basis for reprogramming could also help the transplanted cells integrate better into the brain as the genetic match-up will be the same.

Malin concluded with saying that all options are still on the table and we are yet to find the one given alternative that offers an ethical, logistical and efficient solution to our problems. Somewhat surprisingly she ended on a 200 year old fairy tale metaphor.

- **It's kind of like** the dilemma that Goldilocks was facing. The porridge is not yet the perfect temperature and the bed is still slightly uncomfortable to lie in.

The concluding discussion session was a lively affair. Questions and comments came from all over the place, topically as well as spatially. One question concerned the gray areas of medical tourism for stem cell treatments. A unified panel condemned the practices taking place in Germany, China and most recently the Ukraine, underlining the potentially life threatening aspects of this shady business and the overall negative influence it has for the research field as a whole.

- **What is the** Christmas gift of the year in this field in five years, asked one café visitor.

- **A machine that** produces nerve cells safe for transplantation, said Malin.

- **Something that cures** and slows down the disease process, Håkan filled in.

The final comment of the night brought chuckles in the auditorium as one man asked what dopamine releasing pleasures the panel would recommend.

- **All joking aside,** the effects of physical exercise is a heavily under researched area in Parkinson's disease. It's an area that could provide great benefits that we are hoping to look closer at in the coming years, concluded Håkan Widner, as the night drew to a close.